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### Authors' Affiliation:

<sup>1</sup>Urogynecology & Reconstructive Pelvic Surgery Consultant, First Health Cluster, Maternity Hospital, King Saud Medical City, Riyadh, Saudi Arabia

<sup>2</sup>Obstetrics and Gynecology Resident, First Health Cluster, Maternity Hospital, King Saud Medical City, Riyadh, Saudi Arabia

<sup>3</sup>Obstetrics and Gynecology Resident, Maternity hospital, King Fahad Medical City, Riyadh, Saudi Arabia

<sup>4</sup>Nurse Staff, First Health Cluster, Maternity Hospital, King Saud Medical City, Riyadh, Saudi Arabia

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# Impact of subsequent birth and delivery mode for women with previous OASIS: Systemic review

Noor H Almoussa<sup>1</sup>, Reem Tariq Alsubaie<sup>2</sup>, Abdulelah Mohammed Khuraybah<sup>3</sup>, Nawal Mohammed Alalyani<sup>4</sup>

## ABSTRACT

**Background:** For women who are of reproductive age, the most common cause of anal incontinence is obstetric anal sphincter injury (OASIS). We aimed to assess the subsequent delivery mode effects on quality of life and anal incontinence in women who had a history of OASIS. **Method:** Searches were done using the selection criteria of any study evaluating the effect of a second birth on quality of life and anal incontinence in women who had previously experienced OASIS, the search includes studies published to the end of 2022 in EMBASE, MEDLINE, CINAHL, and PubMed. **Result:** In addition to one item from outside sources, we gathered 911 articles by looking through electric databases. Finally, after filtering, we included seven complete articles to the review. Low AI measurement scores before a second delivery were revealed to be a strong predictor of normal continence following a later birth (An et al., 2014). In a prospective cohort research after first sphincter repair, according to Reid et al., (2014) in a follow-up period of 3 years, symptoms of AI were more prevalent in women who underwent recurrent caesarean sections. Studies by Fitzpatrick et al., (2016), Jordan et al., (2014), and Naidu et al., (2015) showed that women who delivered in the advised way afterward did not have a worsening symptom of AI. **Conclusion:** The existing guideline of a second vaginal delivery for women with a history of OASIS who do not exhibit AI symptoms or sphincter abnormalities is supported by this systematic review.

**Keywords:** Delivery mode, obstetric anal sphincter injury, anal incontinence, quality of life

## 1. INTRODUCTION

The frequency of OASIS, a hazardous consequence of vaginal delivery, has been estimated to be 5.9% in the UK. Over the past ten years, the rate has tripled,

presumably due to improved detection techniques and increasing awareness (Gurol-Urganci et al., 2013). Since OASIS is known to be a significant risk factor for anal incontinence (AI), many women who have experienced an OASIS in the past are concerned about how they will give birth if they become pregnant again. According to the incidence of OASIS in Saudi Arabia was low. Also came to the conclusion that avoiding certain obstetric procedures, such as episiotomy and assisted birth, may lessen these problems. The repair and urgent care of women who suffer from OASIS have been standardised and improved with the release of the RCOG Green-top Guideline, "The Management of Third- and Fourth-Degree Perineal Tears", in 2001 (RCOG, 2015).

The recommendations about the style of delivery for women who get pregnant again, however, are not supported by strong data from studies that look particularly into how the mode of delivery affects bowel function and quality of life in women who have had an OASIS in the past (Webb et al., 2017). The few studies that have examined bowel function after a subsequent birth have evaluated local policy guidelines for services (Scheer et al., 2009). Some of these studies have also limited the women who can be included to those who gave birth vaginally only Harkin et al., (2003) or have excluded women who gave birth in a way that was "against" recommendation, whether due to natural events or maternal choice (Scheer et al., 2009).

Furthermore, it's critical that these women are included since planned and actual delivery modes might occasionally diverge. Few research has examined quality of life (QoL), but there is evidence that modest gastrointestinal problems can have a long-term impact on QoL for women who have had an OASIS (Jangö et al., 2020). The purpose of this systematic review is to evaluate the data that is now available to assist women who have previously received a clinical diagnosis of OASIS and its impact on quality of life in making decisions regarding future pregnancies and delivery methods.

## 2. METHOD

During the preparation for the review, the PRISMA guidelines were considered. Our search targeted studies published until 2022, the databases EMBASE, MEDLINE, CINAHL, and PubMed were electronically searched. A mix of keywords covering both quality of life and intestinal function under medical subject headings. To find publications not found by computerised searches, reference lists of pertinent articles were searched manually. The primary objective of the search was to identify any non-randomised or randomised controlled trials that examined the effects of a future pregnancy on the quality of life or intestinal function of women who had previously experienced OASIS. If conference papers included enough details about the outcome data and study design, they were included. The search was restricted to human research, but no language constraints were imposed.

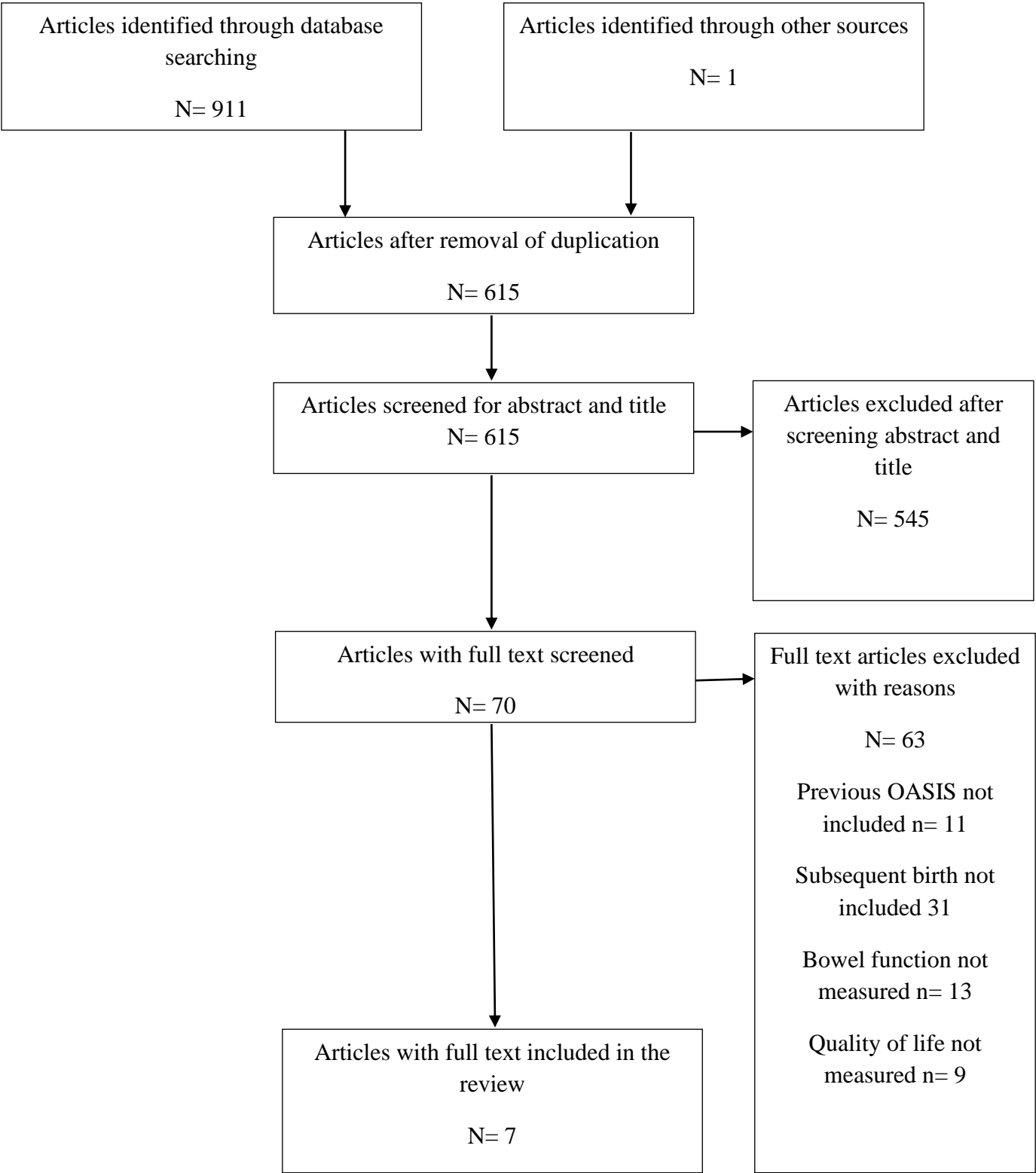
Two steps were involved in the selection of studies. All reviewers evaluated each abstract and title before obtaining the full articles references that were most likely to meet the predetermined criteria. After that, these papers were evaluated in light of pre-established inclusion criteria. Studies on AI or the QOL for women who had previously experienced OASIS and were having another delivery were included in the study if they provided information backed by statistical proof. Using a pre-designed data capture form, information on the participant characteristics, study's quality, and the effects of a subsequent birth and mode on bowel function—including de novo symptoms or modifications to pre-existing symptoms—and quality of life were retrieved. All authors participated in the data extraction process. It was recorded during the data extraction process whether the studies looked at each of these components separately or as composites.

## 3. RESULTS

We collected 911 articles from searching electric databases additional to one article from other resources. after duplication removed 615 articles remained which were screened for abstract and title and 545 articles were excluded, leaving 70 full text articles which was examined for inclusion criteria and 63 of these full texts were removed (Figure 1) finally we included 7 full articles in the review. An et al., (2014) study found that low AI scores prior to a subsequent birth were a significant normal continence predictor after a subsequent birth (p value 0.0002). In their study in women with prior OASIS, 82% reported that their AI symptoms were the same or improved after a subsequent birth.

An et al., (2014) study also compared the quality of life of women who experienced recurrent OASIS in their subsequent birth to those who did not, the results showed no difference in quality of life between the two groups or at 12 weeks postpartum when compared to antenatal parameters. An et al., (2014) study found that there is no difference in de novo AI or symptom worsening between vaginal delivery and subsequent caesarean section for women with prior OASIS. Reid et al., (2014) study showed that at 3-year

follow-up, AI symptoms were more common in women who had subsequent caesarean sections in a prospective cohort study following initial sphincter repair. However, they ascribed this to the fact that symptomatic patients were given elective caesarean sections. As with other results, different investigations had different results.



**Figure 1** Consort chart of selection process

Studies conducted by Naidu et al., (2015), Fitzpatrick et al., (2016), and Jordan et al., (2015) revealed that women who had the recommended manner of subsequent delivery did not have an exacerbation of AI symptoms. Scheer et al., (2009) used a validated questionnaire to show that all AI symptoms, with the exception of solid incontinence, improved following a second vaginal delivery; however, the trial was quite small and only included women who had the recommended method of future birth. Scheer et al., (2009) conducted a study on quality of life and discovered that women who underwent a recommended caesarean section after giving birth had a noteworthy decline in three areas: incontinence impact, emotions, and severity measures. This difference was shown when compared to women who gave birth vaginally. Population characteristics and purpose of the studies included were presented in Table 1, while Table 2 present subject area, study period and main findings of included studies.

**Table 1** Population characteristics and purpose of the studies included

Citation	Country	The purpose of the study in relation to OASIS	Population and Study design, enrolment and data collection	Total number of female respondents to the OASIS follow-up survey	Setting	Women with prior OASIS who had a second delivery were included in the follow-up survey data, and kind of subsequent birth
Reid et al., 2014 (21)	England	Primary OASIS period follow-up	Prospective cohort of women who visited the gynecology and obstetrics clinic in succession	344	Self-completed survey, combined outpatient clinic, and verbal phone interview for those who failed to show up for their scheduled follow-up	92, caesarean section and vaginal delivery
Poen et al., 1998 (22)	Netherlands	Primary OASIS period follow-up	Retrospective cohort of successive women diagnosed with OASIS within a specified time frame using a database	117	questionnaire for self-completion, combined outpatient clinic and postal	43, caesarean section and vaginal delivery
Visscher et al., 2013, (23)	Netherlands	Primary OASIS period follow-up	cohort of women with prior OASIS who visited a specialised clinic during a predetermined window of time and were found via a database, retrospective, and sequential	40	Self-completion survey; available only via mail	15, caesarean section and vaginal delivery

An et al., 2014 (31)	Australia	Effect of a later birth on an earlier OASIS	Retrospective, unreported cohort of women who developed OASIS in one hospital over a predetermined length of time, identified from the hospital database	67	verbal interview conducted over the phone exclusively	67, caesarean section and vaginal delivery
Naidu et al., 2015, (33)	England	Anal function outcome after two OASIS	Case-control study of pregnant women with two following OASIS visits to a specialised OASIS clinic in the future	33	Self-administered survey, only for outpatient clinics	33, vaginal delivery
Fitzpatrick et al., 2016 (34)	Eire	Effect of a later birth on an earlier OASIS	Prospective, consecutive cohort of women with prior OASIS attending a specialised OASIS clinic throughout their second pregnancy	197	Self-administered survey, only for outpatient clinics	197, caesarean section and vaginal delivery
Scheer et al., 2009 (35)	England	Effect of a later birth on an earlier OASIS	Prospective, consecutive cohort of women with prior OASIS attending a specialised OASIS clinic throughout their second pregnancy	59	questionnaire for self-completion, exclusive to outpatient clinics	56, caesarean section and vaginal delivery

**Table 2** Subject area, study period and main findings of included studies

Citation	Subject area	Measurement tool used	Extracted findings for the impact of subsequent birth on AI/QoL for women with previous OASIS	Study 'data period', timing of when survey(s) undertaken
Reid et al., 2014	QoL, Bowel function	MHQ, SMIS	Women who had a second caesarean section 20.8% had a higher rate of reported symptoms of AI at three years after their initial OASIS compared to those who had a subsequent vaginal delivery 2.9%,) p value 0.012).  Four women had de novo AI symptoms, and one woman had chronic AI at follow up of nine weeks and three years.	First survey after OASIS at 9 weeks postpartum, followed by a time-point survey
Poen et al., 1998	QoL Bowel function, sexual	Not reported	Women who gave birth later had a higher incidence of reported AI symptoms 56%	Without a baseline survey and a time-point survey with a

	function		compared to those who did not 34%, p value 0.025	mean of 4.8 years
Visscher et al., 2013	Sexual function, Bowel function, urinary incontinence, QoL	A range of different types of surveys were employed.: Vaizey, Parks, Wexner, FSFI, ICIQ	Incontinence rates were higher in women who had more deliveries compared to those who had previous delivery (p value 0.008).	Early survey with a specified time point survey conducted three months after OASIS
An et al., 2014	Bowel function	SMIS	55.2% of women gave birth vaginally, while 44.8% had a caesarean section. OASIS recurrence was 2.7%. For 82%, the postpartum SMIS scores were the same or better. Low SMIS score at initial visit and low Norderval score were predictive of normal continence after subsequent delivery.	First survey at an unrecorded period after the first OASIS, followed by a follow-up at an unreported time after the second birth
Naidu et al., 2015	QoL Bowel function	SMIS	There was no discernible decline in the clinical state of anorectal function, anal symptoms, or SMIS ratings that indicate the QOL for women who have had a second OASIS, either in the case or control groups.	First survey between weeks 28 and 32 of the next pregnancy, followed by a second assessment between weeks 8 and 12 after the baby is born
Fitzpatrick et al., 2016	Bowel function	Wexner score, modified Jorge	Women with prior OASIS who had a subsequent vaginal birth showed no discernible difference in AI scores. The subgroup of women with occult OASIS and subsequent repeat recognition did not exhibit significantly higher symptoms ratings compared to the non-recurrent OASIS group.	First survey between weeks 28 and 34 of pregnancy, followed by a follow-up at month six
Scheer et al., 2009	QoL, Bowel function, sexual function	Wexner, MHQ	After a subsequent vaginal birth, all symptoms of AI improved, with the exception of solid incontinence, which remained same. Following a recommended vaginal delivery or recommended caesarean section, anorectal manometry pressures did not substantially alter. Squeeze pressure was much lower after the subsequent caesarean section. When compared to scores during the prenatal period, there was a significant improvement in the QoL categories of emotions and incontinence effect for all women after a repeat delivery.	First survey before 36 gestational weeks of the next pregnancy, followed by a follow-up survey 0–6 months after the next delivery

			<p>Women who were suggested for a future caesarean surgery had a significantly worse quality of life in three areas after giving birth: incontinence impact, emotions, and severity measures compared to women who were indicated for a vaginal delivery.</p>	
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4. DISCUSSION

The research that is currently available about how future pregnancies affect AI or women quality of life who have previously had OASIS is compiled in this systematic review. Improvements have been made in the identification and prompt repair of OASIS after delivery Gurol-Urganci et al., (2013); also, it has not been shown that having OASIS will prevent women from becoming pregnant again (Baghestan et al., 2012). Assisting women in selecting the best mode of future delivery is the primary goal of doctors. Women differ greatly in the mode of delivery that they choose for their next delivery, despite data indicating that OASIS risk in a future vaginal birth may be higher than for women with no prior history of OASIS, some are willing to attempt another vaginal birth (Huebner et al., 2013). On the other hand, some women choose to have a caesarean section against the recommendation of their doctor. It's interesting to note that Bondili et al., (2011) study discovered AI improvements in symptomatic women who were advised to have an elective caesarean section later on.

This might be an improvement brought about by attaining the intended mode of delivery, developing a longer-term coping mechanism or adaptation to AI symptoms, or real improvement brought about by management measures like physiotherapy or dietary adjustments. The fact that these two trials had different follow-up periods—six months and ten years, respectively—should be emphasized. These results show the pregnancy psychological complexity and childbirth and the fact that long-term implications of OASIS cannot be considered in isolation, even though they are still up for discussion. According to Reid et al., (2014) the vast majority of women with faecal incontinence improved from their early follow-up symptoms, and the majority of those without symptoms continued to be so at the long-term follow-up. There was no statistically significant change in the prevalence of this symptom. The reason for this could be that most patients with faecal incontinence at long-term follow-up reported de novo symptoms.

Reid et al., (2014) also found that faecal urgency at 9 weeks was a predictor of long-term faecal incontinence lends support to the theory that these new symptoms could be explained by persistent faecal urgency, which could cause leakage if women are unable to postpone a bowel movement. According to Poen et al., (1998) Forty percent of women still experience anal incontinence five years after primary repair of a third-degree perineal rupture. Anal incontinence is more likely to occur in the event of a future vaginal delivery or combined sphincter dysfunction. While women may choose to give birth in the way that best suits them, pregnancy and delivery are dynamic processes with unforeseen circumstances that call for unscheduled interventions. Most of the studies did not include women who had a second caesarean surgery or who did not deliver using their intended method. This has an impact on representativeness because AI can result from various pregnancy and labor-related variables such pudendal neuropathy, protracted labour, assisted birth, or even the pregnancy.

The most recent RCOG guideline RCOG, (2015) recognises that there is insufficient evidence (level 4) to support the guidelines' recommendations for the style of future delivery for women who have previously had OASIS. But this assessment, in our judgement, makes it quite evident that there is now just too little data to offer any kind of useful advise. It also emphasises the lack of research on the long-term effects of bowel function and women quality of life who have a second delivery, given the paucity of studies including women evaluated and repaired following the 2015 RCOG guidelines. This necessitates immediate collaborative prospective effort in order to produce the evidence needed to guide practice. This review results validate the proposal for more research made by the RCOG guideline (RCOG, 2015). In order to secure a quick conclusion without sacrificing its ability to address significant outcomes, a multicenter or even multinational RCT that evaluates the effect of the method of future delivery following OASIS on both Quality of life and AI must be conducted.



## 5. CONCLUSION

The existing guideline for mothers with a history of OASIS who do not have sphincter anomalies or AI symptoms to have a future vaginal delivery is supported by this systematic review, provided that better quality data is not available. Evidence, however, is desperately needed to either validate or invalidate the practice of suggesting elective caesarean sections to women who are symptomatic or who have anomalies of the ultrasonography anal sphincter.

### List of abbreviations

AI: Anal incontinence

OASIS: Obstetric anal sphincter injuries

RCOG: The Royal College of Obstetricians and Gynaecologists

QoL: Quality of life

SMIS: St Mark's Incontinence Score

MHQ: Manchester Health Questionnaire

FSFI: Female Sexual Function Index

ICIQ: International Consultation of Incontinence

### Ethical approval

Not applicable

### Authors contribution

Noor H Almousa, Reem Tariq Alsubaie, Abdulelah Mohammed Khuraybah, Nawal Mohammed Alalayani: Participated in literature collection, writing abstract, introduction, method, result, discussion and conclusion

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### Conflict of interest

The authors declare that there is no conflict of interests.

### Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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